

AMENDMENTS TO THE CLAIMS

1. (Original) A text entry input system, comprising:  
a directional selection means, plus one or more buttons or equivalent user  
5 input means;  
a collection of linguistic objects;  
an output device with a text display area; and  
a processor which comprises an object search engine, a distance value  
calculation module, a linguistic object module for evaluating and ordering  
10 linguistic objects, and a selection component;  
wherein said directional selection means is used to point in a direction of  
each of the letters, or the letters' sub-word equivalents in each writing system, of  
a linguistic object; said processor calculating a distance to find letters and weight  
values for the letters in said pointing direction with said distance calculation  
15 module, said processor retrieving a predicted list of linguistic objects based on  
the letters and weight values with said object search engine, said processor  
evaluating and ordering said predicted list of linguistic objects with said linguistic  
object module, and said selection component being used to select a desired  
linguistic object from said predicted list of linguistic objects.  
20
2. (Original) The system of Claim 1, further comprising an on-screen  
keyboard representation of a ring of letters or the letters' sub-word equivalents in  
each writing system.
- 25 3. (Original) The system of Claim 2, wherein said on-screen keyboard is of  
any shape selected from a group comprising circle, square, oval and polygon.
4. (Original) The system of Claim 1, further comprising a set of compass  
point letters, said compass point letters being placed at positions around in a

linguistic object selection list, in a separate on-screen compass area, or around said directional selection means.

5. (Original) The system of Claim 2, wherein said letters have bottoms  
5 towards the center of said ring.
6. (Original) The system of Claim 2, wherein said letters have an alphabetical order, QWERTY order, or Dvorak order.
- 10 7. (Original) The system of Claim 2, wherein said letters start at the 12 o'clock or 9 o'clock position.
8. (Original) The system of Claim 2, wherein said letters have a moving  
starting position.  
15
9. (Original) The system of Claim 2, wherein said letters have a clockwise or counterclockwise layout.
10. (Original) The system of Claim 2, wherein each of said letters occupies  
20 different amount of radians depending upon use frequency.
11. (Original) The system of Claim 1, wherein a number of characters are printed around said directional input means.
- 25 12. (Original) The system of Claim 1, wherein said directional selection means is a joystick or an omni-directional rocker switch.

13. (Original) The system of Claim 12, wherein said joystick has at least a 10° precision.
14. (Original) The system of Claim 1, wherein said one or more buttons or  
5 equivalent user input means is comprised of at least four buttons independent of said directional selection means.
15. (Original) The system of Claim 1, wherein said one or more buttons or  
10 equivalent user input means comprises a joystick or directional rocker switch.
16. (Original) The system of Claim 12, wherein said joystick or omni-  
directional rocker switch is a component of a multi-function video game  
controller.
- 15 17. (Original) The system of Claim 2, wherein said system provides auditory  
or visual feedback on each movement of said directional selection means.
18. (Original) The system of Claim 17, wherein said visual feedback is a solid  
20 or gradient-fill pie wedge shape appearing on said on-screen keyboard, said pie  
wedge shape being centered on a current selected direction.
19. (Original) The system of Claim 1, wherein said linguistic objects are  
ordered according to a linguistic model.
- 25 20. (Original) The system of Claim 19, where said linguistic model includes  
one or more of:  
frequency of occurrence of a linguistic object in formal or conversational  
written text;

frequency of occurrence of a linguistic object when following a preceding linguistic object or linguistic objects;

proper or common grammar of the surrounding sentence;

application context of current linguistic object entry; and

5 recency of use or repeated use of the linguistic object by the user or within an application program.

21. (Original) The system of Claim 1, wherein said list of predicted linguistic objects are ordered by a combination value of a calculated weighted distance  
10 value and a linguistic model.

22. (Original) The system of Claim 21, wherein said linguistic model comprises one or more of:  
frequency of occurrence of a linguistic object in formal or conversational  
15 written text;  
frequency of occurrence of a linguistic object when following a preceding linguistic object or linguistic objects;  
proper or common grammar of the surrounding sentence;  
application context of current linguistic object entry; and  
20 recency of use or repeated use of the linguistic object by the user or within an application program.

23. (Original) The system of Claim 21, wherein the linguistic object with the highest combination value is selected by default.  
25

24. (Original) The system of Claim 1, wherein the linguistic objects longer than the number of actions of direction selection means are included in said list of predicted linguistic objects.

25. (Original) The system of Claim 1, further comprising a means for extending a selected linguistic object with completions.
26. (Original) The system of Claim 25, wherein said completions are  
5 displayed in a pop-up list after a button press or directional input.
27. (Original) The system of Claim 1, further comprising a means for precisely selecting said letters of said linguistic object.
- 10 28. (Original) The system of Claim 1, wherein an exact spelling sequence is displayed in said text display area.
29. (Original) The system of Claim 1, wherein the last entered letter is indicated in said exact spelling sequence.
- 15 30. (Original) The system of Claim 2, wherein the last entered letter is indicated in said on-screen keyboard.
31. (Original) The system of Claim 1, further comprising a means to change  
20 the last entered letter.
32. (Currently Amended) A text input method using a directional input device, ~~selection means~~, wherein each direction entered corresponds, directly or indirectly, to one or more linguistic object subcomponents according to a  
25 predetermined mapping, ~~letters or symbols~~, said method comprising the steps of:  
a user indicating a desired direction using said directional input means;  
recording the direction in an angular notation comprising radians,  
gradients, degrees, or an equivalent units; and  
retrieving a letter from a table or database based on the angle recorded.

preparing an output by applying the predetermined mapping to user-submitted directional input entries submitted via the directional input device, the output including candidate linguistic object subcomponents and associated probability weightings;

5        retrieving a list of predicted linguistic objects from the dictionary based upon the output;

facilitating user selection of a desired linguistic object from said list.

10       33.    (Currently Amended) The method of Claim 32, the user-submitted directional input entries comprising angular direction, wherein the angular direction is derived from recording the X-Y offset ~~of a~~ of the directional input device and converting that offset into an angular notation comprising radians, gradients, or degrees.

15       34.    (Original) The method of Claim 33, wherein the conversion is a variation on the standard Cartesian to Polar formula of  $\text{Angle} = \arctan(Y/X)$ .

20       35.    (Currently Amended) The method of Claim 32, wherein the candidate linguistic object subcomponents ~~said letter retrieved~~ can be one of any number of adjacent or nearby letters or symbols.

25       36.    (Currently Amended) The method of Claim 32, further comprising utilizing a linguistic model to order said list of predicted linguistic objects according to likelihood of intended selection by the user. ~~wherein said possible matching letters are presented in order of predicted likelihood of desired match.~~

30       37.    (Currently Amended) The method of Claim 32, ~~wherein the letters presented are limited to those that match certain positions in linguistic objects listed in a database.~~ wherein the linguistic objects comprise words and the linguistic object subcomponents comprise letters.

38. (Canceled)

39. (Canceled)

5

40. (Currently Amended) The method of Claim 36, ~~39~~, wherein the order of said list of predicted linguistic objects is based on a combination value of a calculated weighted distance value ~~and a~~ and the linguistic model.

10 41. (Currently Amended) The method of Claim 36, ~~40~~, wherein the linguistic model comprises one or more of:

frequency of occurrence of a linguistic object in formal or conversational written text;

15 frequency of occurrence of a linguistic object when following a preceding linguistic object or linguistic objects;

proper or common grammar of the surrounding sentence;

application context of current linguistic object entry; and

recency of use or repeated use of the linguistic object by the user or within an application program.

20

42. (Canceled)

43. (Currently Amended) The method of Claim 32, wherein said directional input device means is associated with an on-screen keyboard.

25

44. (Original) The method of Claim 43, wherein said on-screen keyboard comprises a ring of letters, numbers or other symbols.

45. (Original) The method of Claim 43, wherein said on-screen keyboard is represented in Polar or Cartesian coordinate system for calculation.
46. (Currently Amended) The method of Claim 32, ~~39~~, wherein said list of  
5 predicted linguistic objects is retrieved from a vocabulary database, and wherein a plurality of linguistic objects stored in said vocabulary database is ordered according to a linguistic model.
47. (Original) The method of Claim 46, where said linguistic model comprises  
10 one or more of:  
frequency of occurrence of a linguistic object in formal or conversational written text;  
frequency of occurrence of a linguistic object when following a preceding linguistic object or linguistic objects;  
15 proper or common grammar of the surrounding sentence;  
application context of current linguistic object entry; and  
recency of use or repeated use of the linguistic object by the user or within an application program.
- 20 48. (Original) The method of Claim 46, wherein said plurality of linguistic objects is stored in a mixed case format in said vocabulary database.
49. (Original) The method of Claim 46, wherein said vocabulary database further comprises a user database which stores linguistic objects added by the  
25 user.
50. (Original) The method of Claim 49, wherein said linguistic objects added by the user in said user database are ordered by length of linguistic object and recency of use.



51. (Original) The method of Claim 46, wherein said vocabulary database further comprises a recency database to support linguistic object prediction based on recency of use.

5

52. (Original) The method of Claim 40, wherein said calculated weighted distance value is calculated based on the angular difference between each selected direction and the corresponding letter or symbol in predicted linguistic objects.

10

53. (Currently Amended) The method of Claim 40, wherein said calculated weighted distance value is calculated based in part on the weight of each linguistic object subcomponent, ~~said letter~~, ~~said letter~~ weight being determined by its use frequency.

15

54. (Currently Amended) The method of Claim 32, ~~39~~, wherein the user selects a partial linguistic object and continues with more directional inputs.

55. (Original) The method of Claim 54, wherein said list of predicted linguistic objects is filtered to only include linguistic objects that begin with said selected partial linguistic object.

20

56. (Currently Amended) The method of Claim 32, ~~39~~, wherein the user selects an entry from said list of predicted linguistic objects ~~predicted words~~ and the highest-ranked linguistic object ~~word~~ containing said selected entry remains selected upon the input of additional linguistic object subcomponents ~~letters~~ until said entry becomes invalid by further addition of linguistic object subcomponents, ~~letters~~.

25

57. (Currently Amended) The method of Claim 32, wherein said directional  
input device includes ~~select means is~~ a set of buttons.
58. (Currently Amended) The method of Claim 32, wherein said directional  
5 input device includes ~~select means is~~ a joystick or omni-directional rocker  
switch.
59. (Currently Amended) The method of Claim 43, wherein said on-screen  
keyboard further comprises a smart punctuation symbol, said smart punctuation  
10 symbol when retrieved is automatically interpreted as a punctuation symbol,  
diacritic mark or tonal indication at the place in the input sequence where a  
matching punctuation symbol, diacritic mark or tonal indication occurs in  
predicted linguistic objects. ~~predicted words.~~
- 15 60. (Currently Amended) The method of Claim 32, wherein a set of buttons or  
a second directional input device ~~selection means~~ can be used alone or with said  
directional input device, ~~selection means~~, separately or simultaneously, to switch  
or choose input modes, to change from input to word selection, or to invoke other  
functions.
- 20 61. (Currently Amended) The method of Claim 32, ~~42~~, further comprising the  
steps of:  
invoking an undo means after selecting a linguistic object from said list of  
predicted linguistic objects; and  
25 displaying the previous retrieved linguistic object subcomponents ~~letters~~  
and showing previously retrieved list of predicted linguistic objects.
62. (Currently Amended) The method of Claim 32, ~~42~~, further comprising the  
steps of:  
30 selecting a linguistic object from a text message; and

displaying subcomponents the letters of said linguistic object as if said subcomponents had ~~letters have been entered~~ exactly ~~as exact letters~~ and showing a retrieved list of predicted linguistic objects corresponding to said subcomponents. letters.

5

63. (New) A text entry input module for use with user interface components including a direction indicator and a output device with a text display area, the text entry input module comprising:

a database of linguistic objects;

10

wherein a preestablished relationship exists between angular directions of the direction indicator and subcomponents of linguistic objects in the dictionary;

a calculation module to apply the preestablished relationship to each user-submitted direction entered via the direction indicator to provide an output, said output including: multiple predicted linguistic object subcomponents and, for each predicted linguistic object subcomponent, an associated proximity weighting;

15

an object search engine configured to utilize the output to retrieve from the dictionary a list of predicted linguistic objects potentially representative of the user-submitted directions;

20

a linguistic object module programmed to utilize at least one predetermined linguistic model to order said list of potential linguistic objects according to likelihood of intended selection by the user;

a selection component to facilitate user selection of a desired linguistic object from said ordered list of predicted linguistic objects.

25

64. (New) A text entry input module for use with user interface components including a direction indicator and an output device with a display, the text entry input module comprising:

a vocabulary database of linguistic objects;

30

a mapping between angular directions of the direction indicator and linguistic object subcomponents;

a calculation module to apply the mapping to each user-submitted direction entered via the direction indicator to provide an output including: multiple potentially user-intended linguistic object subcomponents and associated proximity weightings;

5 an object search engine configured to retrieve a list of predicted linguistic objects from the vocabulary database based upon said calculation module output;

a linguistic object module programmed to utilize a linguistic model to order said list of predicted linguistic objects according to likelihood of intended  
10 selection by the user; and

a selection component to facilitate user selection of a desired linguistic object from said ordered list of predicted linguistic objects.

65. (New) A text input method using a directional input apparatus, wherein  
15 each directional input corresponds to one or more sub-word components according to a predetermined mapping, said method comprising:

receiving machine-readable signals representing user-submitted directional input entered via the directional input apparatus;

calculating values for each directional input including one or more sub-  
20 word components and associated probability weightings;

retrieving a list of predicted words based upon said calculated values;  
facilitating user selection of a desired word from said list.